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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,636	09/16/2003	Syamal K. Ghosh	86895RLO	1919

7590 03/07/2006

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EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT PAPER NUMBER

1732

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,636

Applicant(s)

GHOSH ET AL.

Examiner

Jeff Wollschlager

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/16/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's amendment filed January 9, 2006 has been received. Claims 11-20 have been cancelled as being drawn to a non-elected invention. The office action dated December 8, 2005 states that claims 1-10 are provisionally rejected on the ground on non-statutory obviousness type double patenting over application 10/663,578. Claims 1-10 are now considered unpatentable for the reasons indicated in this office action.

Terminal Disclaimer

The terminal disclaimer filed on January 9, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of application 10/663,578 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 112

Claims 6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 6 and 9 refer to an air furnace. The disclosure does not provide any more definition as to what exactly is intended to encompass an air furnace. For examination purposes, an air furnace is understood to be a heating device that utilizes air, either directly or indirectly, as a means for heating.

To overcome this rejection, the applicant is required to concur with the examiner's interpretation or substantiate another interpretation without adding new matter to the disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 6, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (U.S. Patent Application Publication 2004/0016907; filed July 21, 2003) in view of Van Slyke et al. (U.S. Patent 6,797,314; issued September 28, 2004; filed July 3, 2001).

The applied references have a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claim 1, Shi teaches a method for forming a homogeneous mixture of powders of organic material including at least one dopant component and one host component to provide a homogeneous mixture for forming a pellet for thermal physical vapor deposition producing an organic layer on a substrate for use in an organic light-emitting device comprising a) combining organic materials, such materials including at least one dopant component and one host component, b) placing the mixture of organic materials in a container, d) heating the organic materials in the container until the organic materials are melted, e) mixing the organic materials to form a homogeneous

mixture of organic materials, f) solidifying the homogeneous mixture of organic materials and g) removing the solidified homogeneous mixture of organic materials from the container (paragraph [0040]). Shi does not explicitly teach c) sealing the container in a reduced pressure atmosphere.

However, Van Slyke et al. teach that organic powders used in thermal physical vapor deposition have a high propensity to entrain air and/or moisture between particles under ambient conditions and that it is required to outgas a charge of organic powders placed into a vapor deposition chamber through preheating the powder at a reduced pressure (col. 2, lines 45-59). Therefore it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the claimed invention to modify the method taught by Shi with the additional teaching of Van Slyke et al. to seal the container in a reduced pressure environment because one of ordinary skill would understand that heating the container having the powder at a reduced pressure would be beneficial since the required outgassing would obviously become more difficult once the powders are compacted into pellet form.

As to the specific pressures claimed in claim 10 these would also be obvious to one of ordinary skill in the art. For example, it is well known that 10^{-1} and 10^{-3} Torr are easily achieved and common pressures in "reduced pressure" environments. Additionally, Van Slyke et al. teach reduced pressures in the 10^{-3} to 10^{-6} range in their disclosure (col. 6, lines 1-3).

Claim 3 is directed toward the amount of dopant component in the mixture formed by the method of claim 1. The claimed range is 0.1 – 20% by weight. Van

Slyke et al. teach that any range of dopant material may be selected (col. 17 lines 41-43). This is read to be from 0 – 100%.

As to claim 4, Shi teaches cooling the mixture to ambient temperature and solidifying the mixture (paragraph [0040]). Cooling the mixture to ambient temperature would solidify the mixture since at ambient temperature the components of the mixture are solids.

Regarding claims 6 and 9, Shi in view of Van Slyke et al. teach the method of claim 1. Specifically, Shi in view of Van Slyke et al. teach mixing and melting powders. Shi in view of Van Slyke et al. do not explicitly teach a rotating air furnace operating at 300 °C to 700 °C. However, with the teaching of Shi in view of Van Slyke et al., it would have been obvious to one of ordinary skill in the art to employ a rotating air furnace as a machine capable of providing both mixing and melting simultaneously. Rotating air furnaces are well known in the art and are readily available commercially for lab scale and industrial scale applications and utilizing one for mixing and melting would have been *prima facie* obvious. As to the claimed temperature between 300 °C to 700 °C, this range is also *prima facie* obvious. One of ordinary skill in the art would be well aware what temperatures to utilize in order to achieve the desired results with the teaching of Shi in view of Van Slyke et al. to melt the powder.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being obvious over Shi (U.S. Patent Application Publication 2004/0016907; filed July 21, 2003) in view of Van Slyke et al. (U.S. Patent 6,797,314; issued September 28, 2004; filed July 3, 2001) and

further in view of Okuyama et al. (U.S. Patent 6,835,681; issued December 28, 2004; filed December 19, 2001).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claim 2, Shi in view of Van Slyke et al. teach the method of claim 1 as discussed in the 103(a) rejection above. Further, Van Slyke et al. teach compacting the homogeneous mixture of organic powder to form a pellet suitable for thermal physical vapor deposition to produce an organic layer on a substrate for use in an organic light-emitting device (col. 18 lines 6-12). Shi in view of Van Slyke et al. do not teach h) pulverizing the solidified homogeneous mixture into a homogeneous mixture of organic

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powder. However, Okuyama et al. teach pulverizing the solidified mixture of organic materials into a homogeneous mixture of organic powder (col. 4 lines 44-45).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify the method of Shi in view of Van Slyke et al. to take a powder mixture of organic materials containing at least one host material and one dopant material prior to forming a pellet from the homogeneous mixture for thermal physical vapor deposition using the method of pulverizing the powder prior to press molding taught by Okuyama et al. because Okuyama et al. teach producing a homogeneous mixture in a relatively uncomplicated manner and because Van Slyke et al. teach the usefulness of a homogeneous mixture for physical thermal vapor deposition (col. 4, lines 1-6). Further, it would be well known to one of ordinary skill in the art that pulverizing the solidified mass prior to compacting the mixture into a pellet would facilitate the physical introduction of the material into the compacting device and that it would further facilitate outgassing from the material prior to its final disposition as a pellet. Thus, the claimed invention as a whole was *prima facie* obvious over the combined teachings of the prior art.

As to claim 5, Okuyama et al. analogously teach compacting a powder mixture in a preferable range of 50 – 200 MPa (approximately 7250 – 29,000 pounds per square inch) (col. 4 lines 53-54). Therefore it would have been *prima facie* to take the method of forming a pellet through compaction taught by Shi in view of Van Slyke et al. and complement it with the teaching of Okuyama et al. because one of ordinary skill in the art would be motivated to optimize and better understand pressures useful for forming a

pellet. Although the compacting pressure range taught by Okuyama et al. is not identical to the range taught by the instant application, the instant range is still rendered obvious. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F. 2d 1575 16 USPQ2d 1934 (Fed. Cir. 1990).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being obvious over Shi (U.S. Patent Application Publication 2004/0016907; filed July 21, 2003) in view of Van Slyke et al. (U.S. Patent 6,797,314; issued September 28, 2004; filed July 3, 2001) and further in view of Saegusa (U.S. Patent 5,840,267; issued November 24, 1998)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

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that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claims 7 and 8, Shi in view of Van Slyke et al. teach the method of claim 1 as discussed in the 103(a) rejection above. Shi in view of Van Slyke et al. are silent as to the container to be used. However, Saegusa teaches mixing powder in a metal/platinum container (col. 10, lines 39-41). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to take the method of Shi in view of Van Slyke et al. and to implement the metal/platinum container taught by Saegusa with a reasonable expectation of success because one of ordinary skill would be motivated to provide a container for melting the powder as taught by Shi in view of Van Slyke et al. that would not melt during the process. The container taught by Saegusa would have been an obvious choice. Thus, the claimed invention as a whole was *prima facie* obvious over the combined teachings of the prior art.

Conclusion

All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Friday 7:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JW

Jeff Wollschlager
Examiner
Art Unit 1732

February 27, 2006



MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER